Figure 1.

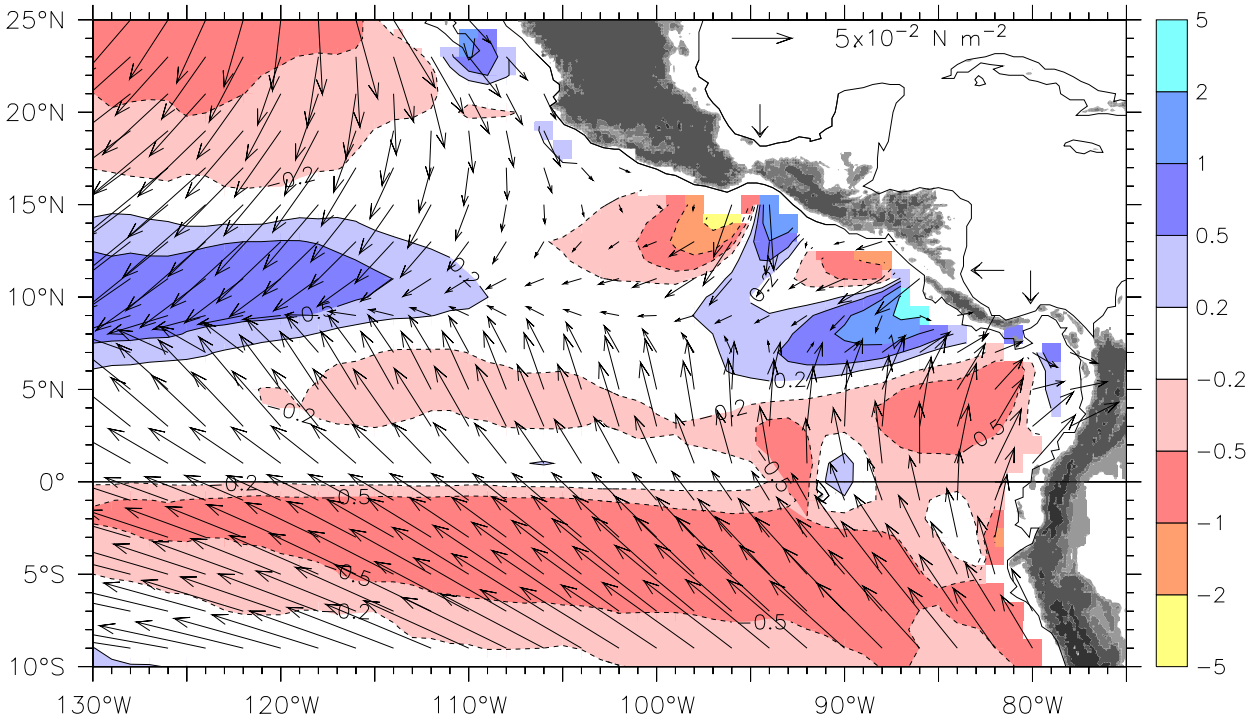

Figure 1. Mean wind stress (vectors) and wind stress curl (colors) averaged over Aug 1999 - Jul 2002. Red shading shows negative curl (downwelling in the northern hemisphere) and blue positive curl, in units of 10^{-7} N m^{-3}, with (stretched) color key at right. The scale vector is in the Gulf of Mexico. Gray shading on land indicates altitudes greater than 250 m. The three mountain gaps referred to in the text are marked with arrows on the Atlantic side; from north to south these jets are denoted Tehuantepec, Papagayo, and Panama

Figure 2.

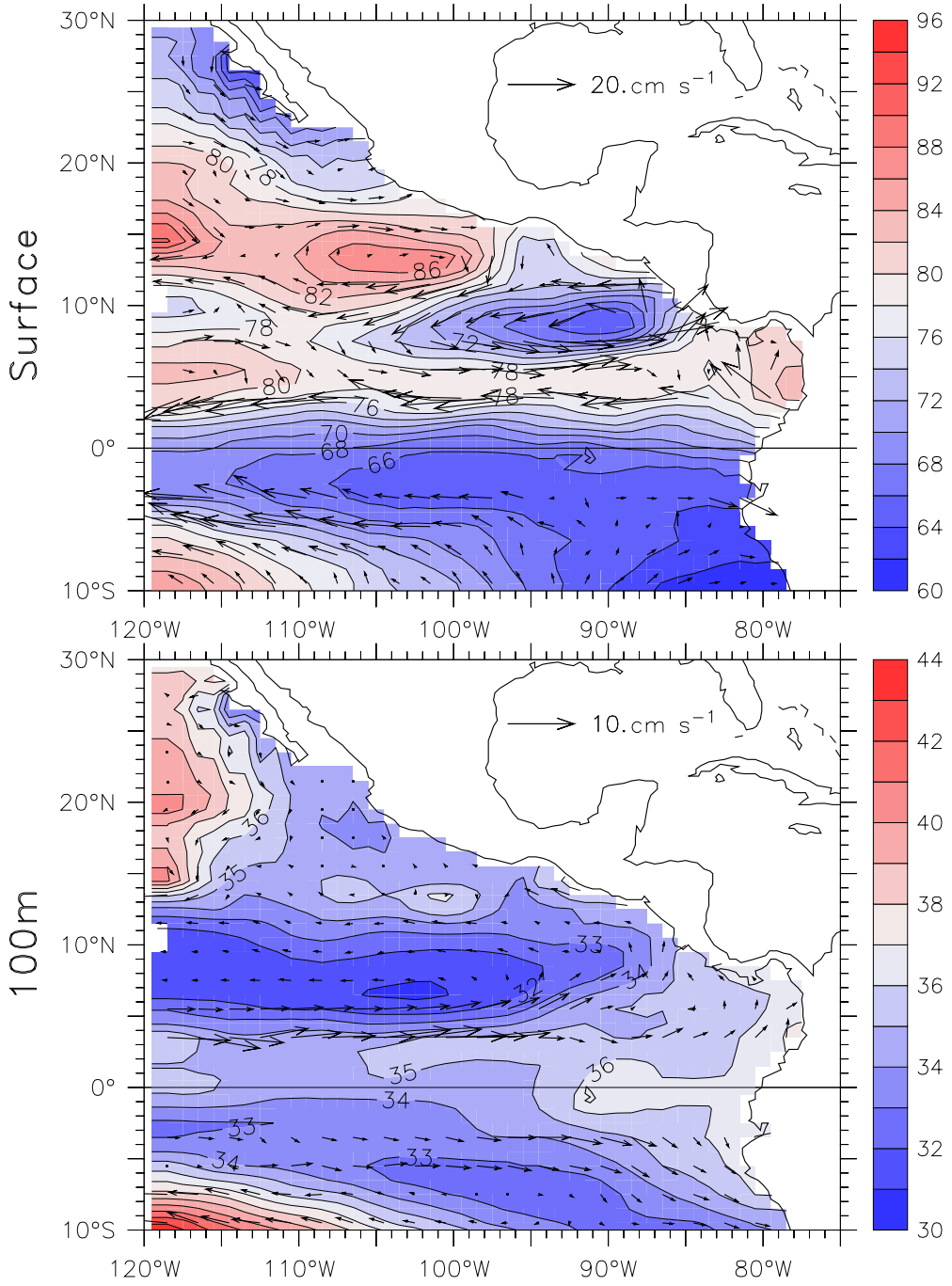

Figure 2. Mean dynamic height and geostrophic currents relative to 300m. Top: surface. Bottom: 100m. Red colors indicate high dynamics heights, blue low (color scales on right). The contour interval is 2 dyn-cm in the top panel, 1 dyn-cm in the bottom. The scale vector for each plot is located in the Gulf of Mexico. Geostrophic current vectors are omitted within ±3° latitude.

Figure 3.

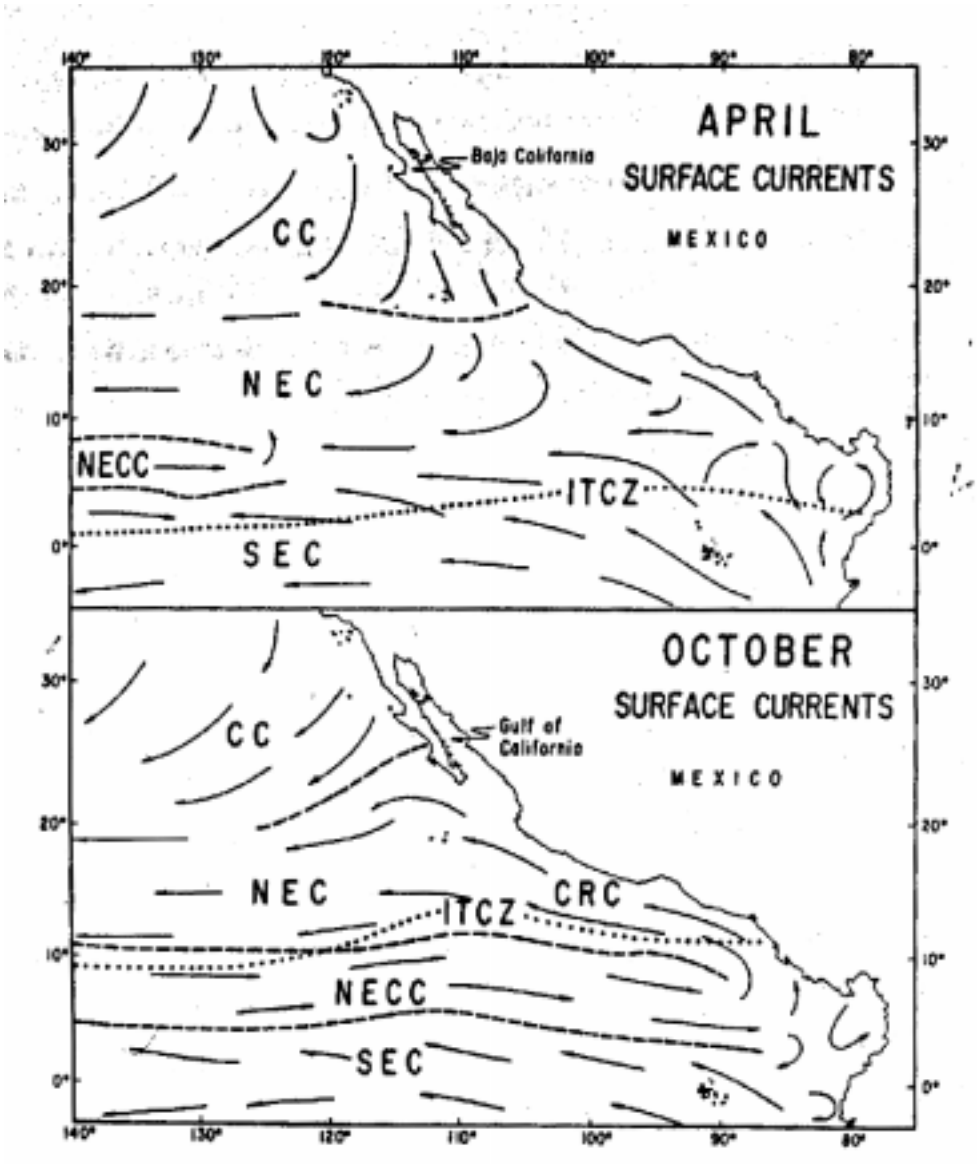

Figure 3. Annual cycle surface circulation based on ship-drift records (after Baumgartner & Christensen, 1985, which was adapted from Wyrtki, 1965). Current abbreviations are: California Current (CC), North Equatorial Current (NEC), North Equatorial Countercurrent (NECC), South Equatorial Current (SEC) and Costa Rica Coastal Current (CRCC). The Intertropical Convergence Zone (ITCZ) is marked by a dotted line. The dashed lines around the NECC show its changing extent.

Figure 4.

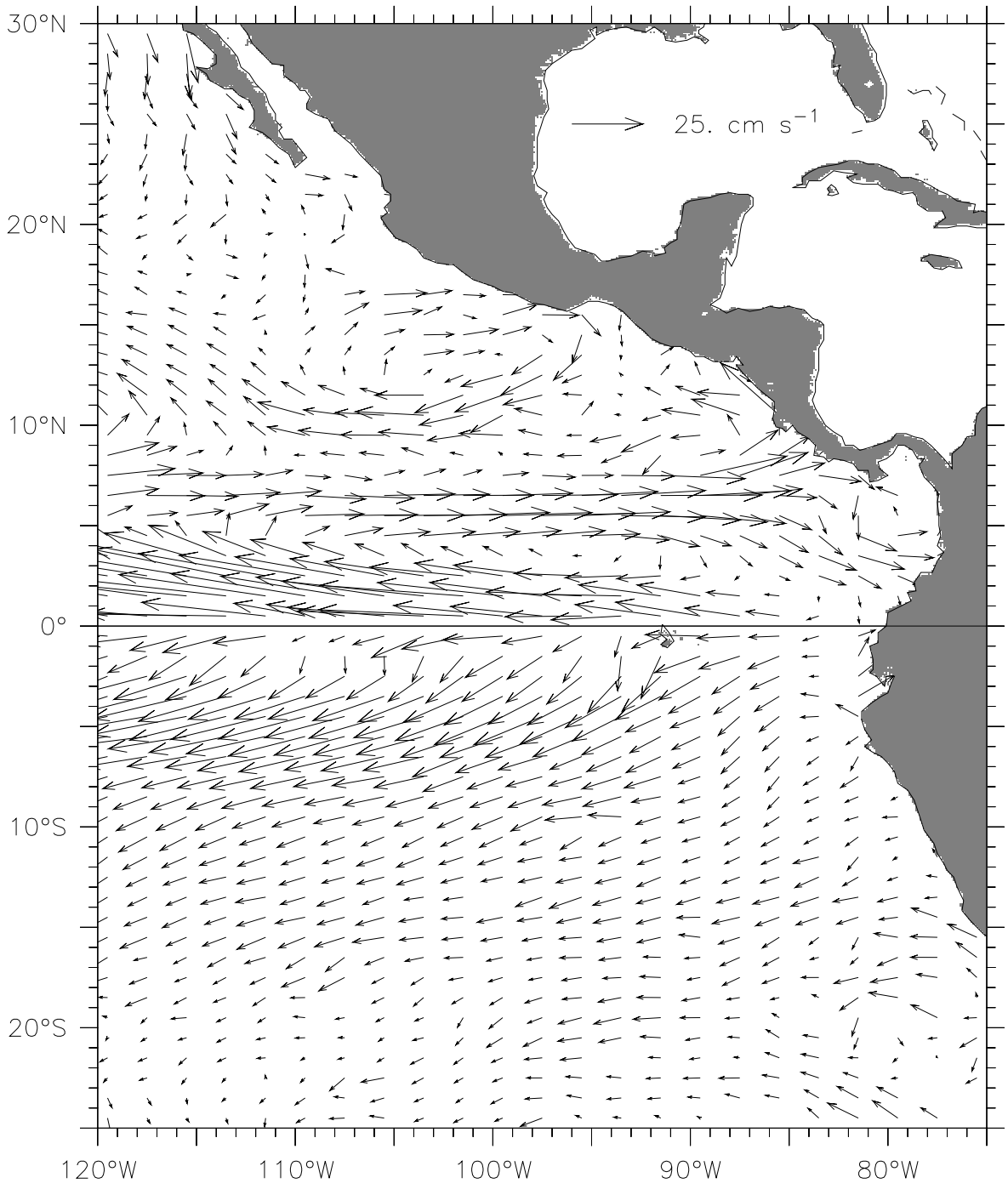

Figure 4. Mean surface circulation from surface drifters. The scale vector is located in the Gulf of Mexico.

Figure 5.

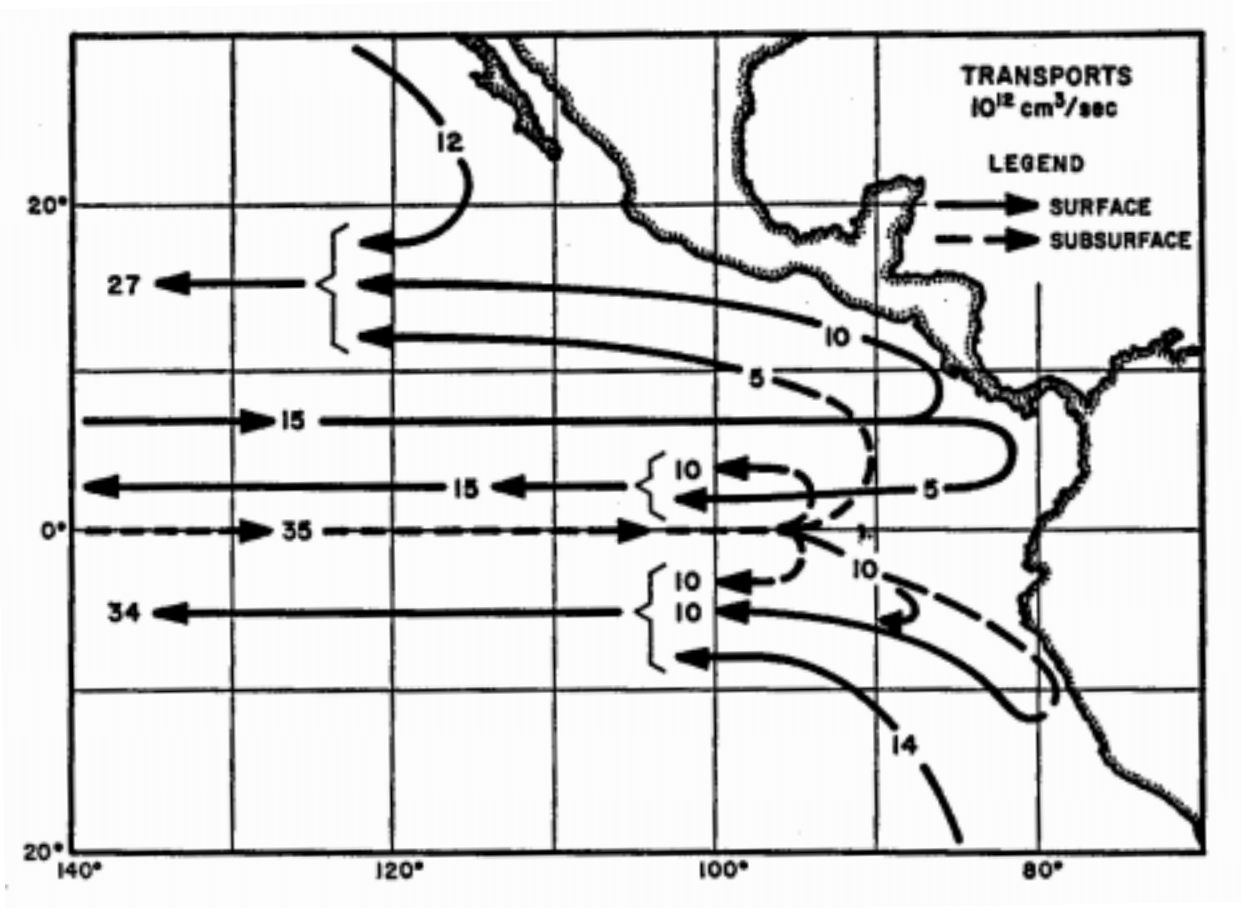

Figure 5. Schematic three-dimensional circulation in the eastern tropical Pacific. (After Wyrtki 1966).

Figure 6.

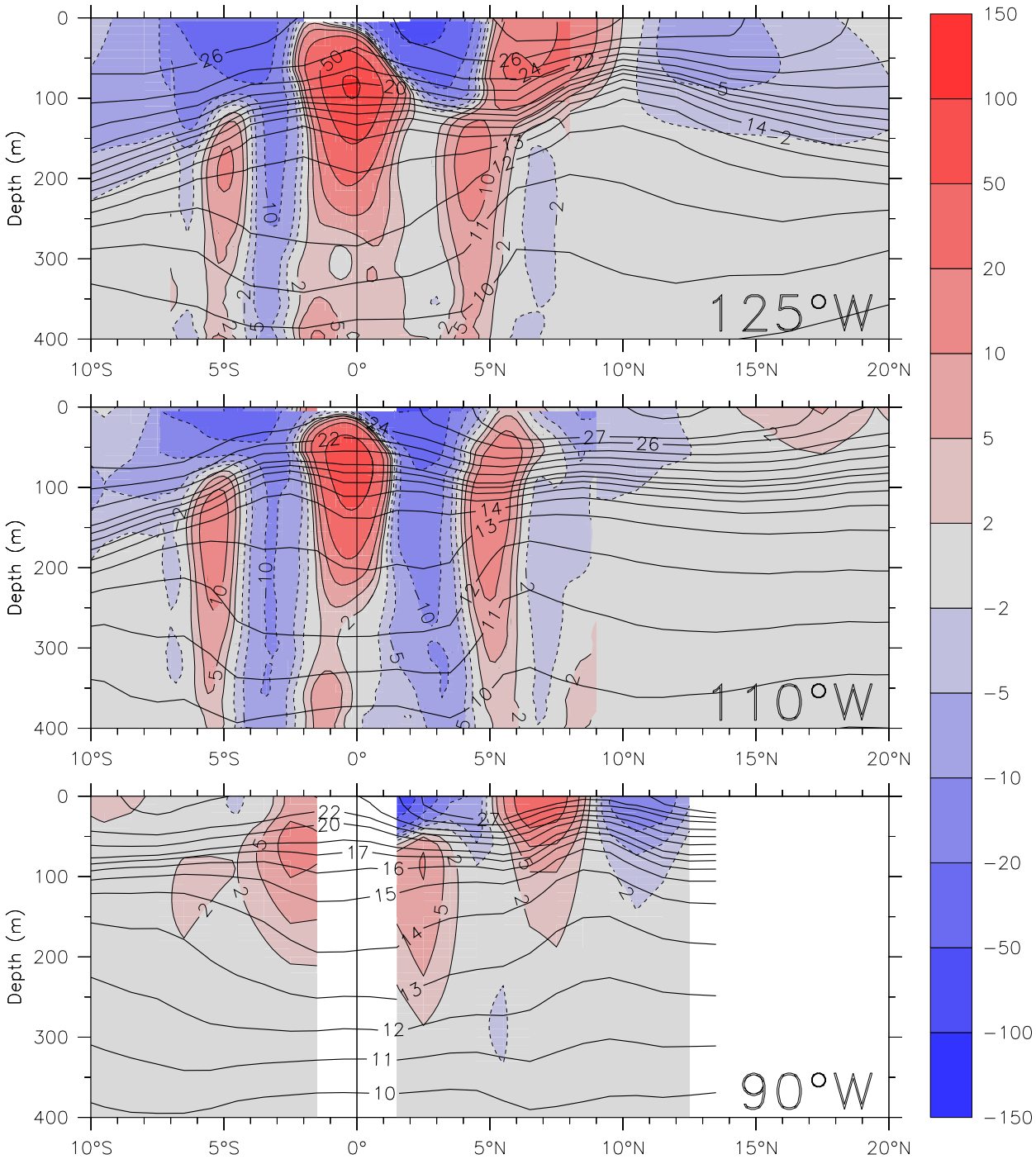

Figure 6. Mean meridional sections of temperature (heavy contours) and zonal current (colors; cm s^{-1}) at the three longitudes listed in the lower right corner of each panel. Red shading indicates eastward currents, blue westward. At 125°W and 110°W, directly measured currents are shown within ±8° latitude (see section 3.2); elsewhere the currents are geostrophic.

Figure 7.

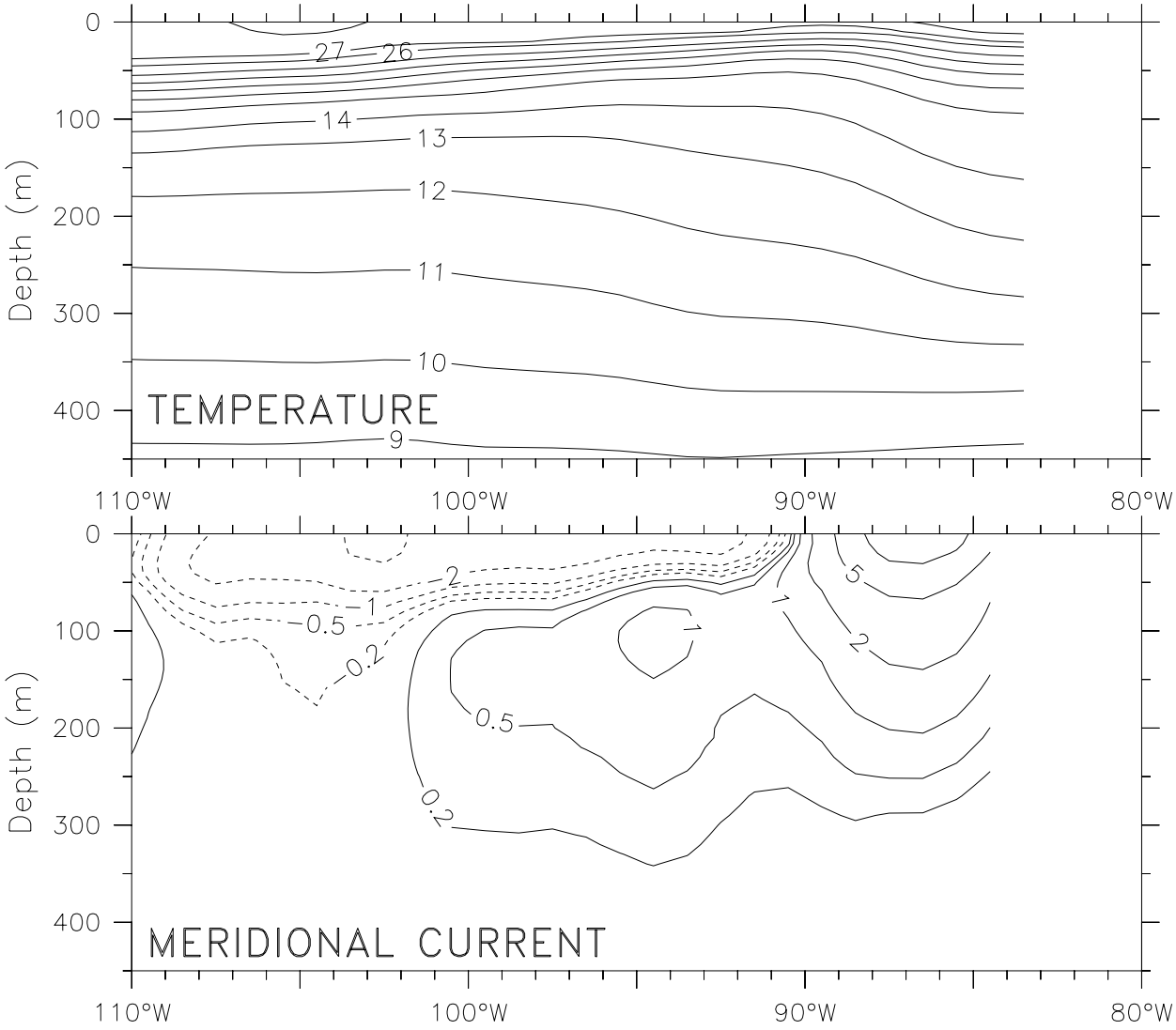

Figure 7. Zonal sections of temperature (top) and meridional geostrophic current (bottom) along 8.5°N, from the coast (right edge) to 110°W. The contour interval for temperature is 1°C from 8°C to 14°C, then 2°C from 16°C to 26°C, then 1°C from 27°C to 29°C. In the bottom panel, northward current is indicated by solid contours, southward by dashed contours; the contour interval is every 5 cm s^{-1} within ±15 cm s^{-1}, with additional contours at ±1 and 2 cm s^{-1}, ±0.5 cm s^{-1} and ±0.2 cm s^{-1}.

Figure 8.

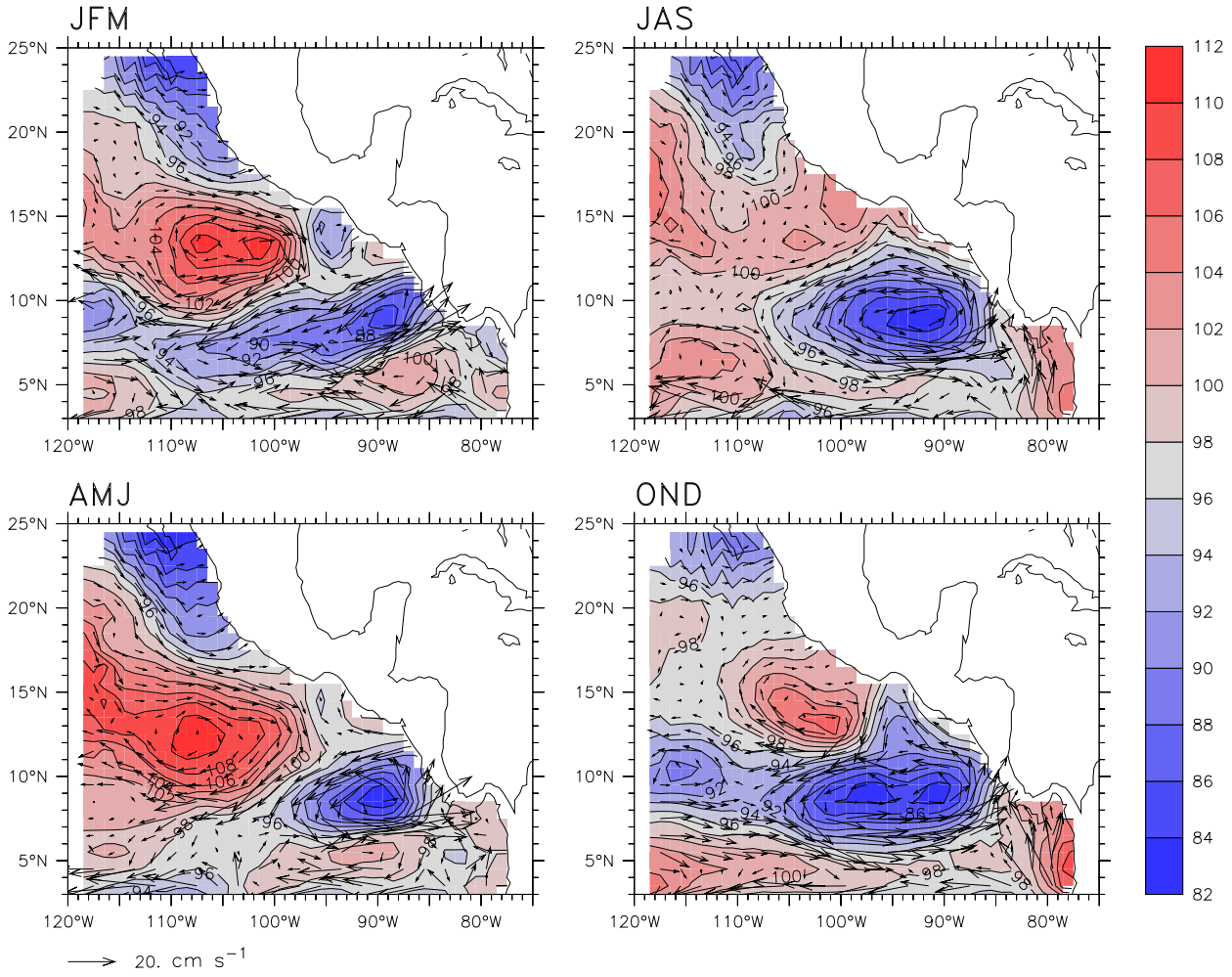

Figure 8. Annual cycle of surface dynamic height and geostrophic current (relative to 450m), shown as four average seasons. Red colors indicate high dynamic heights, blue low. The contour interval is 2 dyn-cm. The scale vector for geostrophic currents is at lower left. The dynamic height contours shown here have very nearly the same patterns as contours of 20°C depth for the corresponding season.

Figure 9.

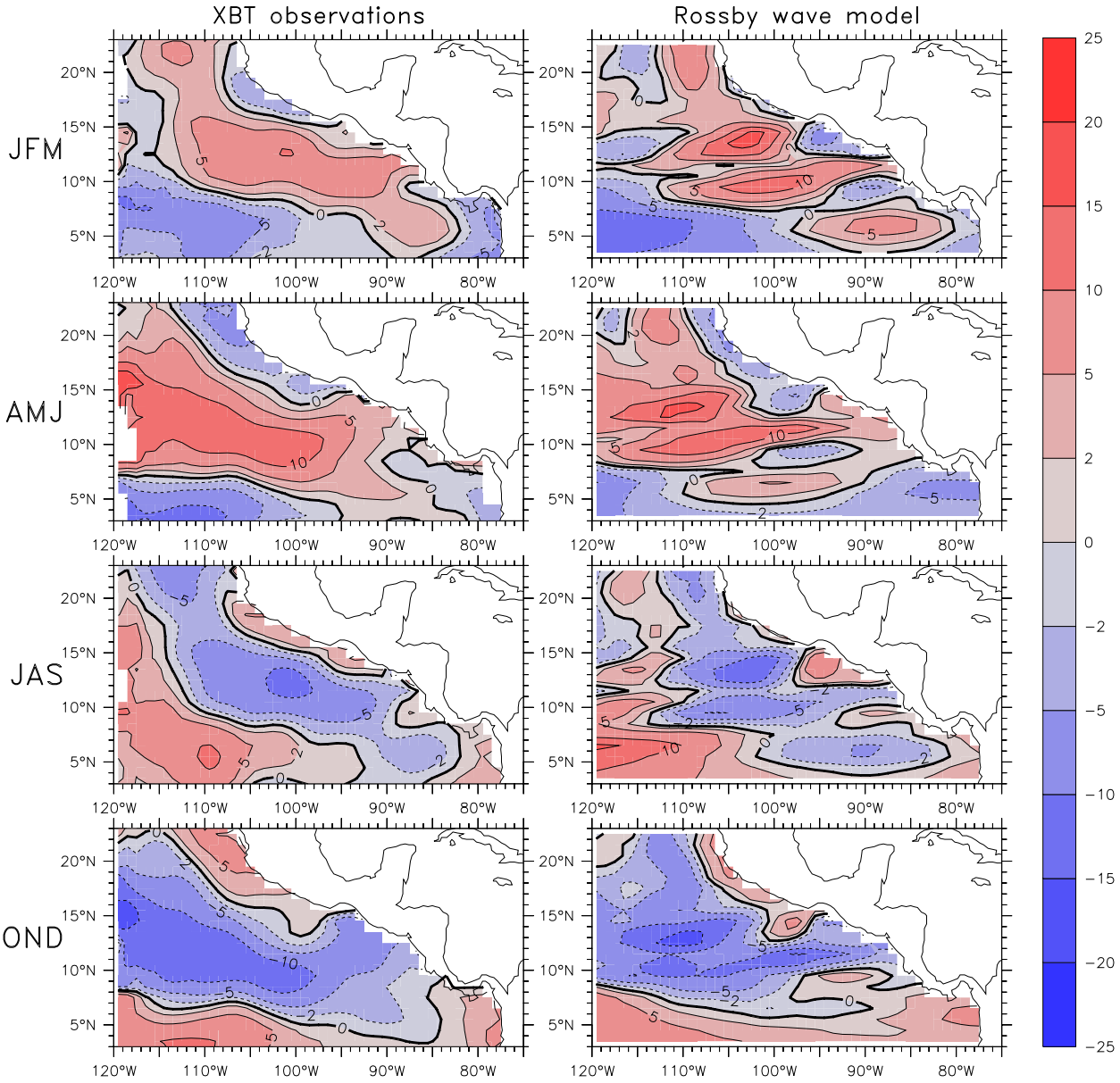

Figure 9. Comparison of annual cycle anomalies of observed 20°C depth (left panels) and the Rossby wave model solution (section 4.2.1) (right panels), for four average seasons (indicated to the left of each row). The common color key is at right, with contour interval of 5 m.

Figure 10.

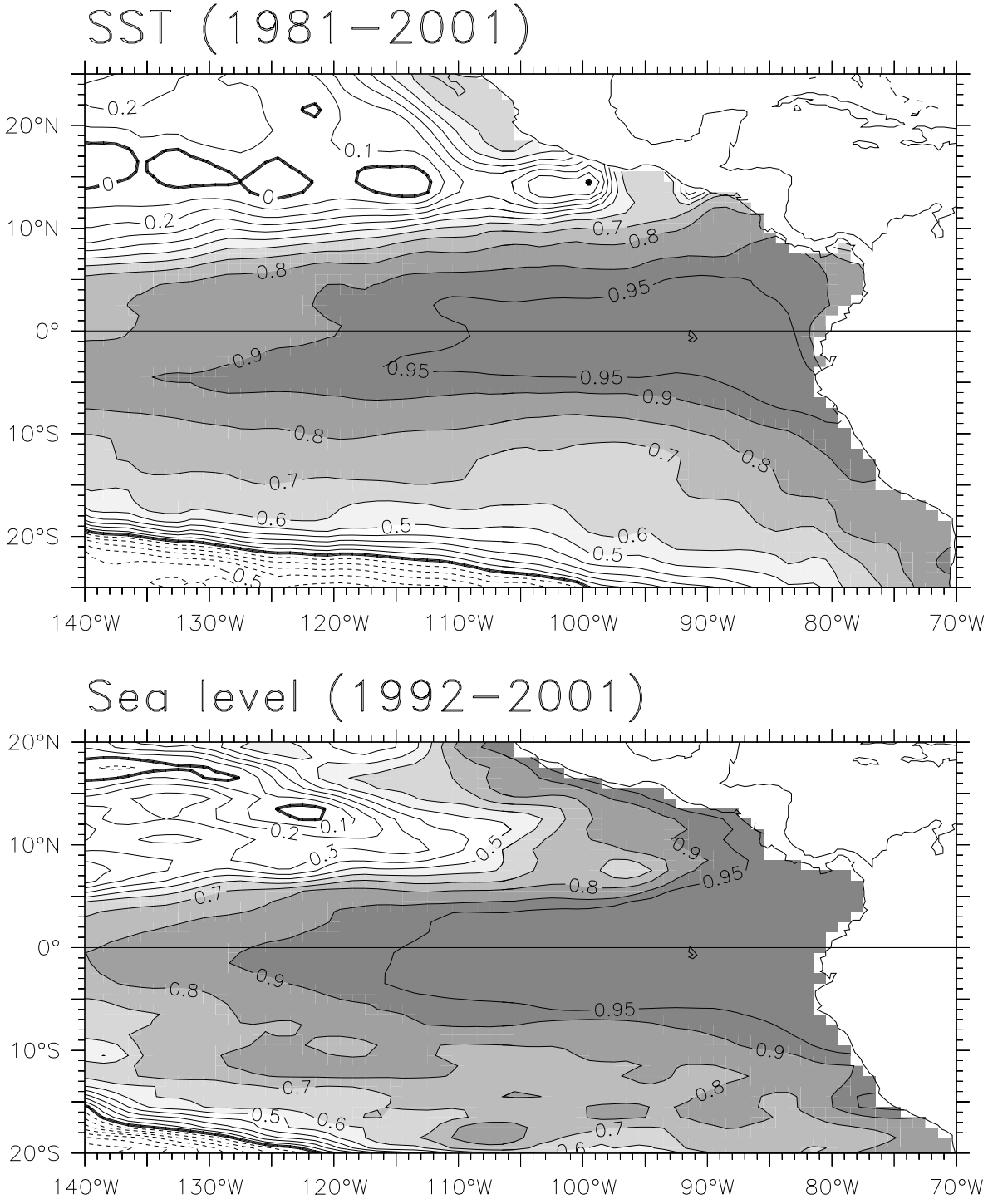

Figure 10. Correlations of interannually-smoothed quantities with themselves at 0°, 95°W. Top: SST from the Reynolds SST product (1981-2001). Bottom: sea level from the Topex altimeter (1992-2001). Interannual smoothing is demeaning by the average annual cycle, then smoothing with an 11-month running mean.